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Copus

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(54) **MULTIPURPOSE PORTABLE LOCK**

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(22) Filed: **Jun. 6, 2006**

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(51) **Int. Cl.**
E05B 73/00 (2006.01)

(52) **U.S. Cl.** ..... **70/14**; 70/19; 70/38 A; 70/51; 70/94; 70/DIG. 65; 292/258; 292/259 R; 292/288; 292/289

(58) **Field of Classification Search** ..... 70/91, 70/93, 94, 14, 19, DIG. 65, 38 A, 51–53, 70/177, 178, 202, 211; 292/256, 258, 259, 292/292, 288–290, 295–298, DIG. 44, 259 R
See application file for complete search history.

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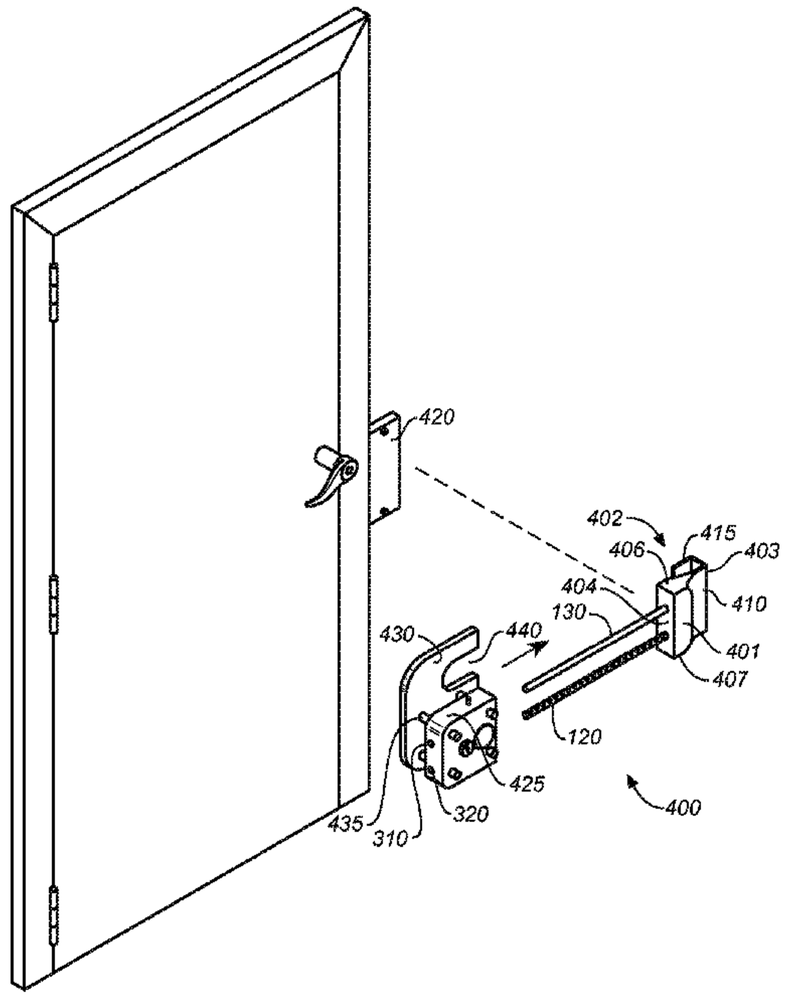
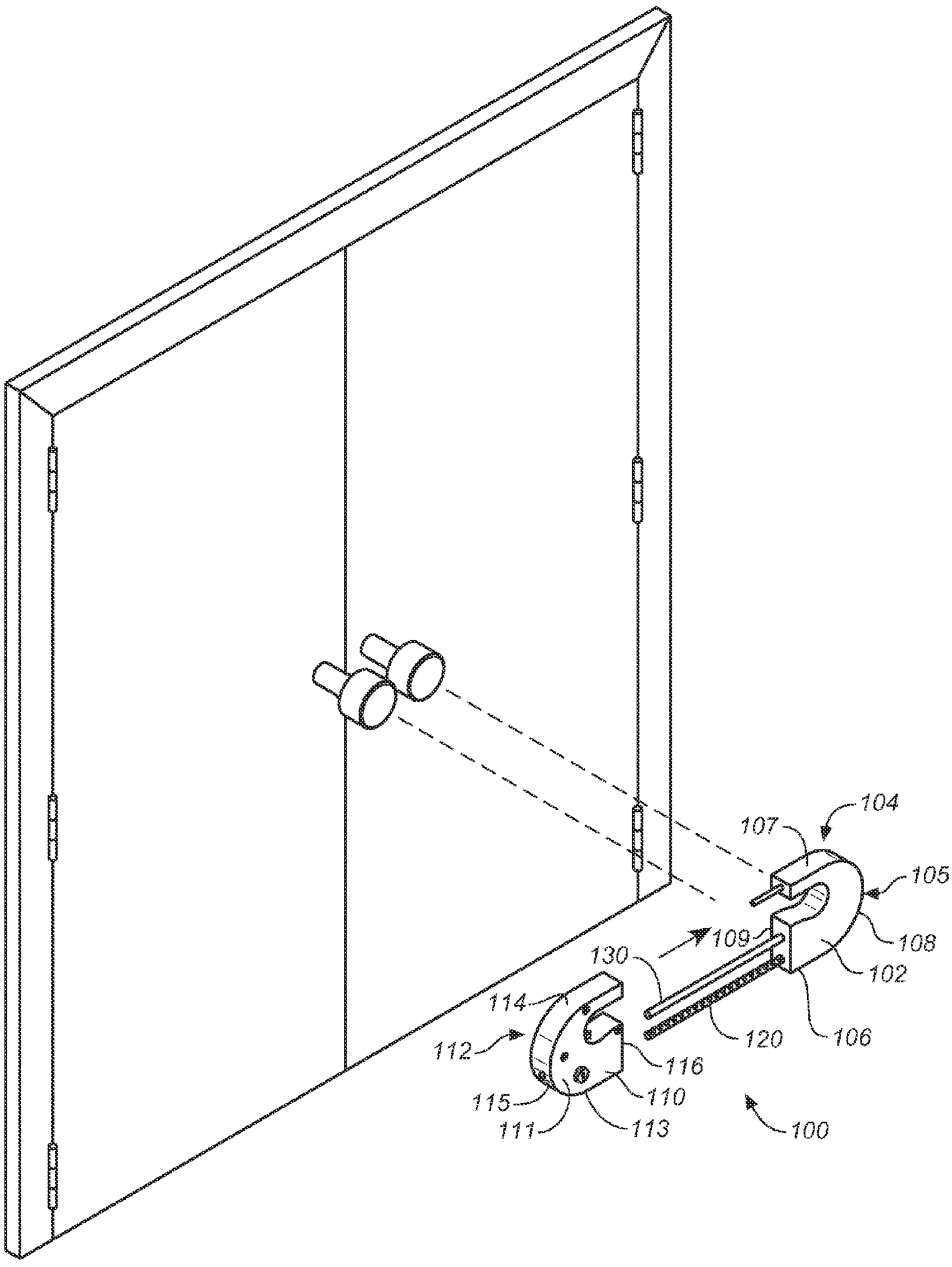
(57) **ABSTRACT**

A portable multipurpose lock having a shackle base with two parallel rods having opposing interior sides with spaced-apart detents, an adjustable lock body with through holes for slidable insertion of the rods, a lock for engaging the rods to secure and lock the lock body on the rods, and one or more recesses formed in the shackle base, lock body, or both, which facilitates placement of the lock around an object or objects to be secured.

10 Claims, 14 Drawing Sheets




104
107
105
108
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130
102
114
120
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116
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111
113
100

FIG._1A

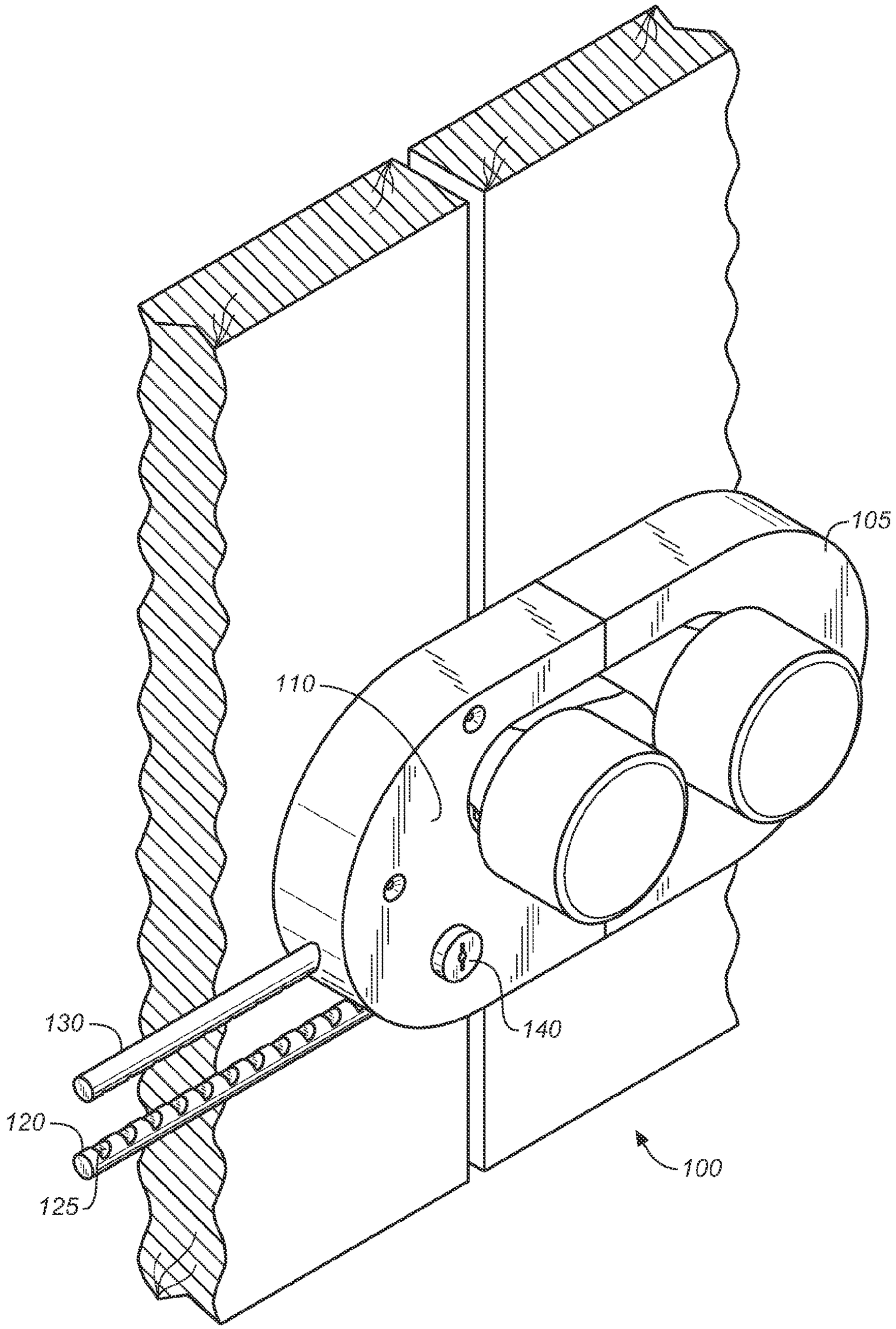


FIG._1B

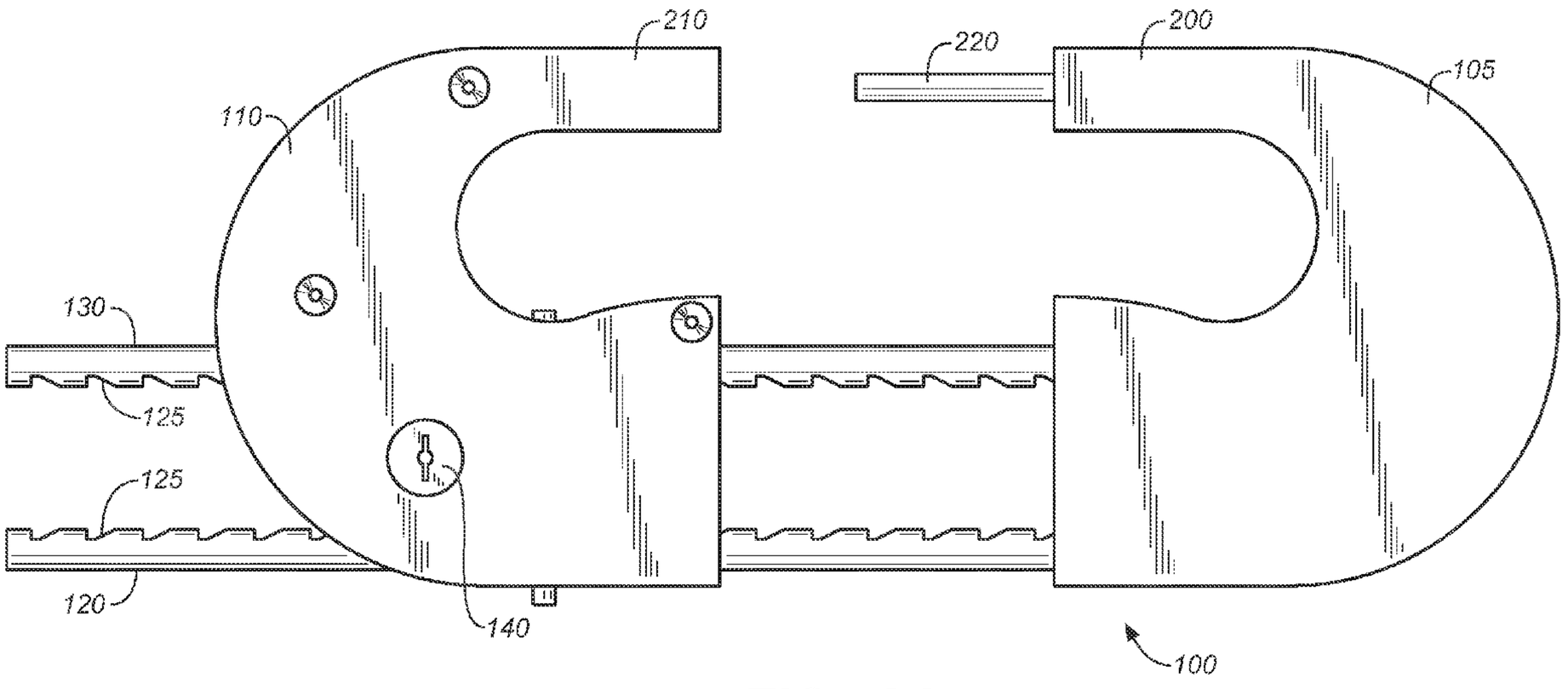


FIG._2A

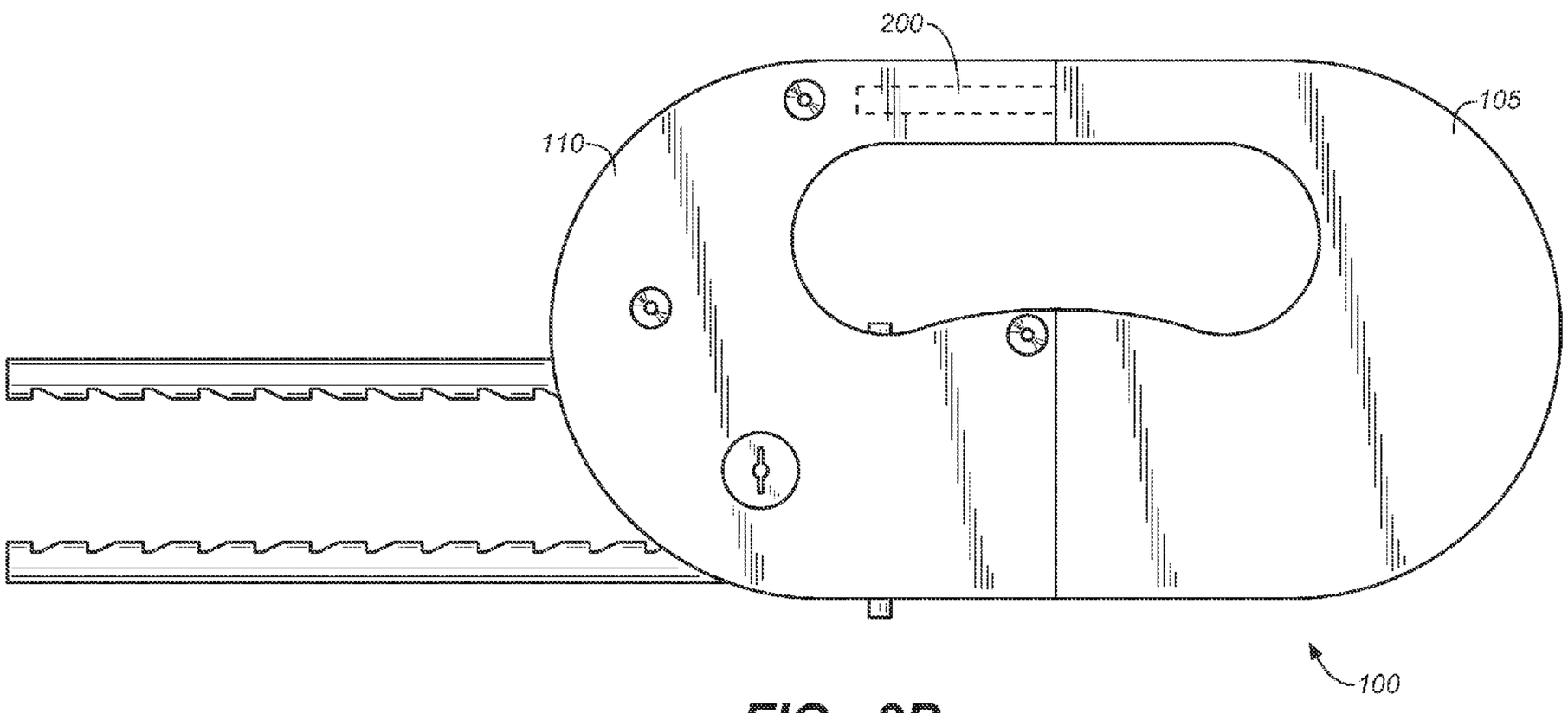


FIG._2B

FIG._3A

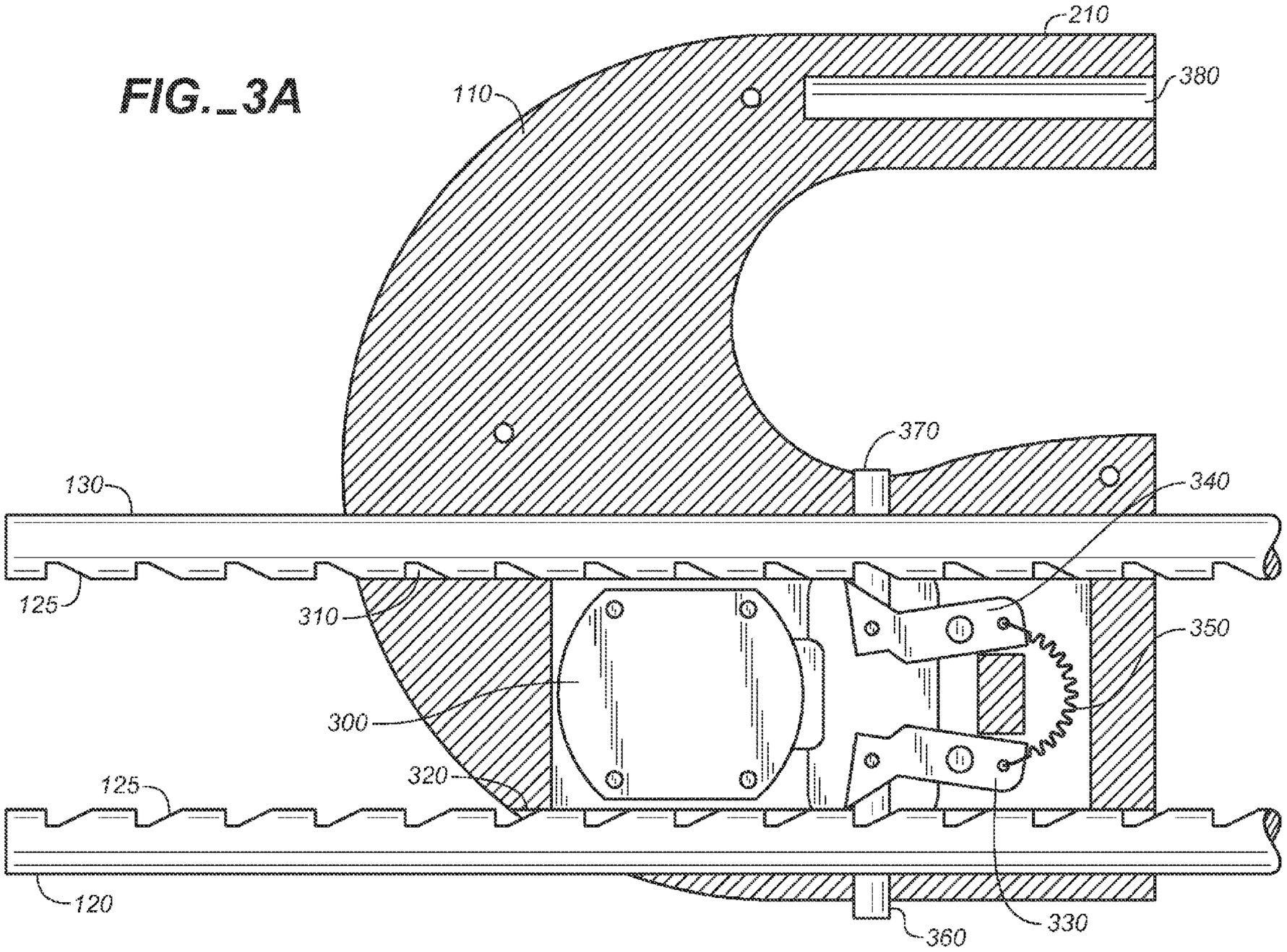
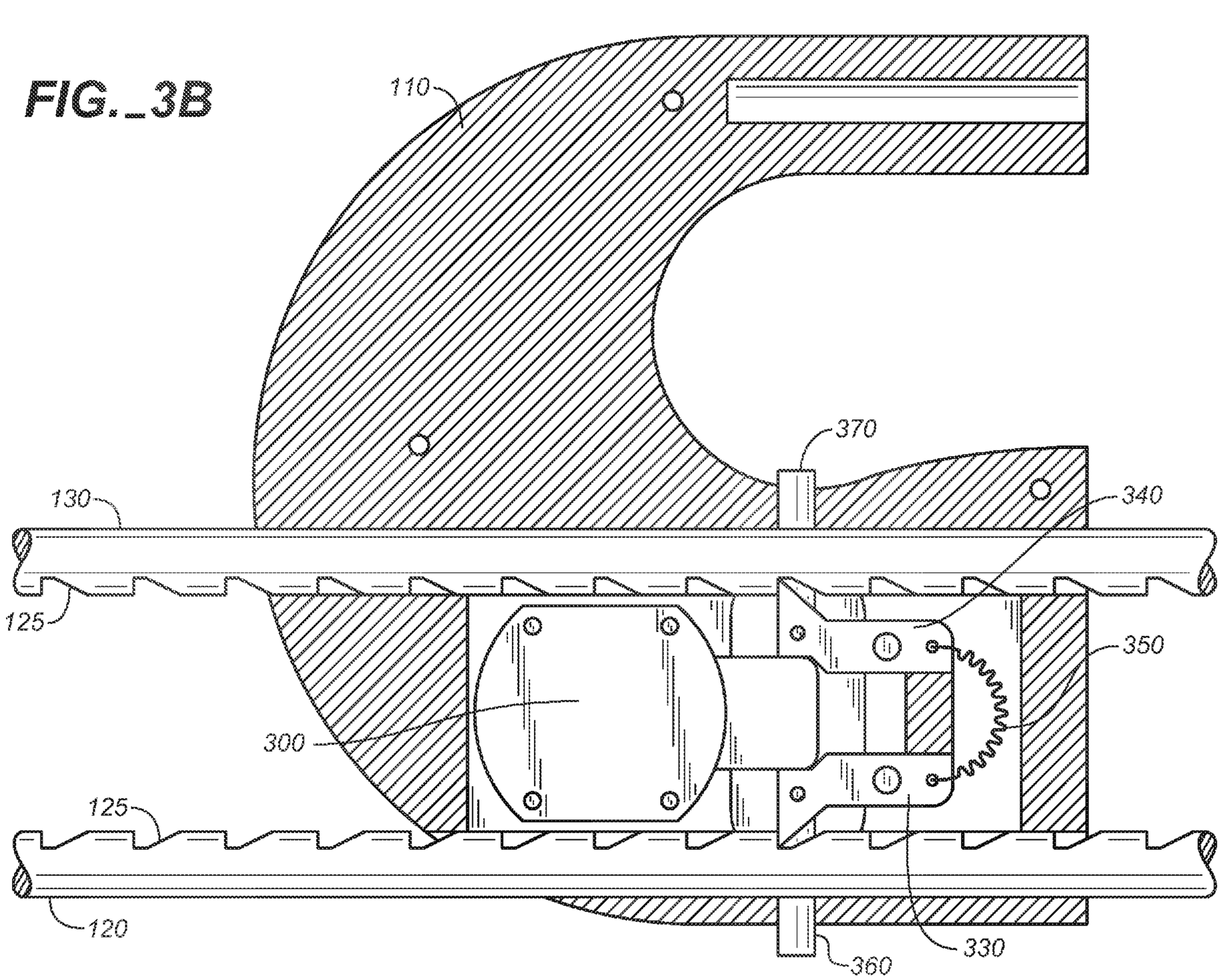


FIG._3B



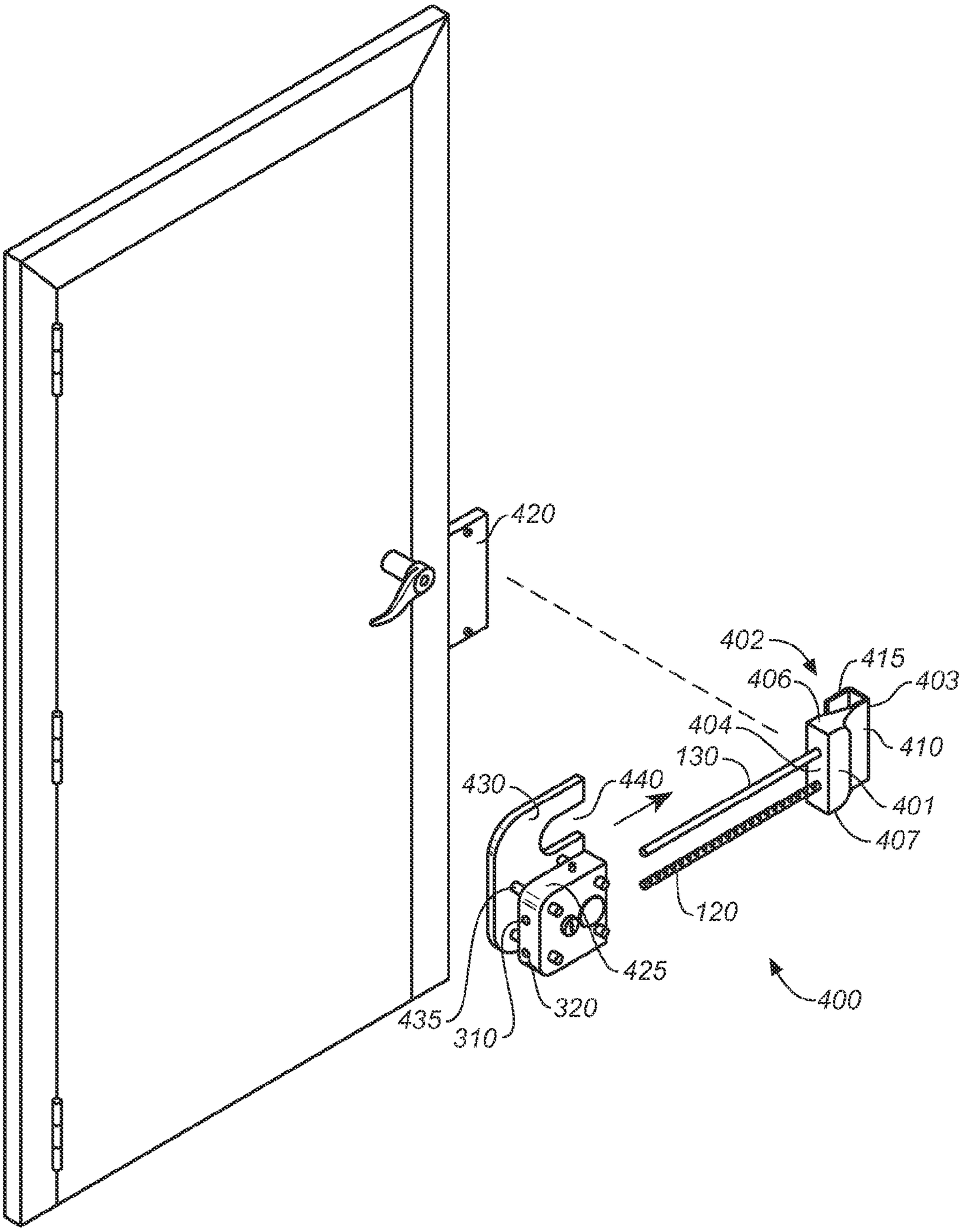

420
402
415
406
403
404
410
130
430
440
401
407
120
425
400
435
310
320

FIG._4

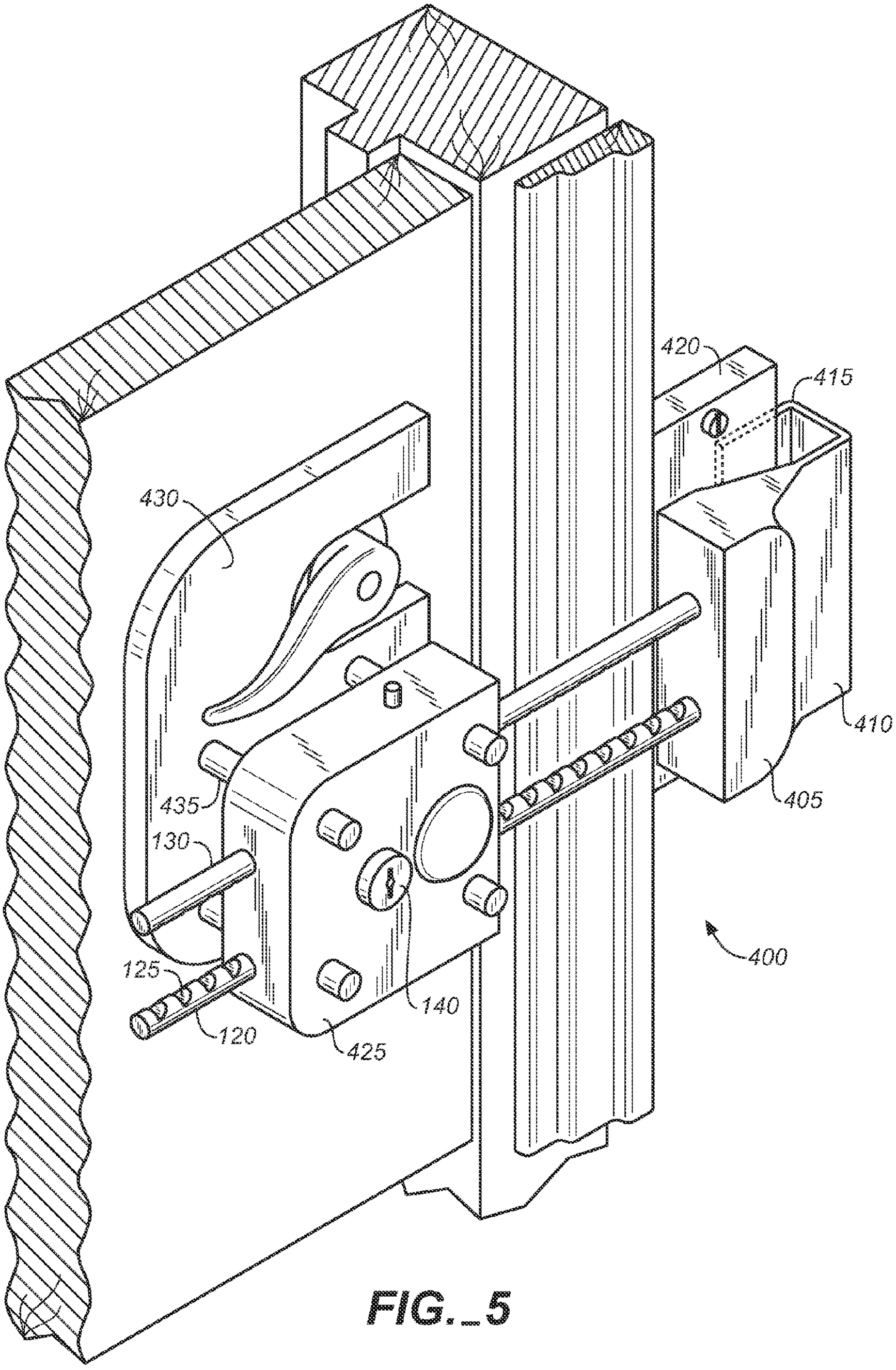


FIG._5

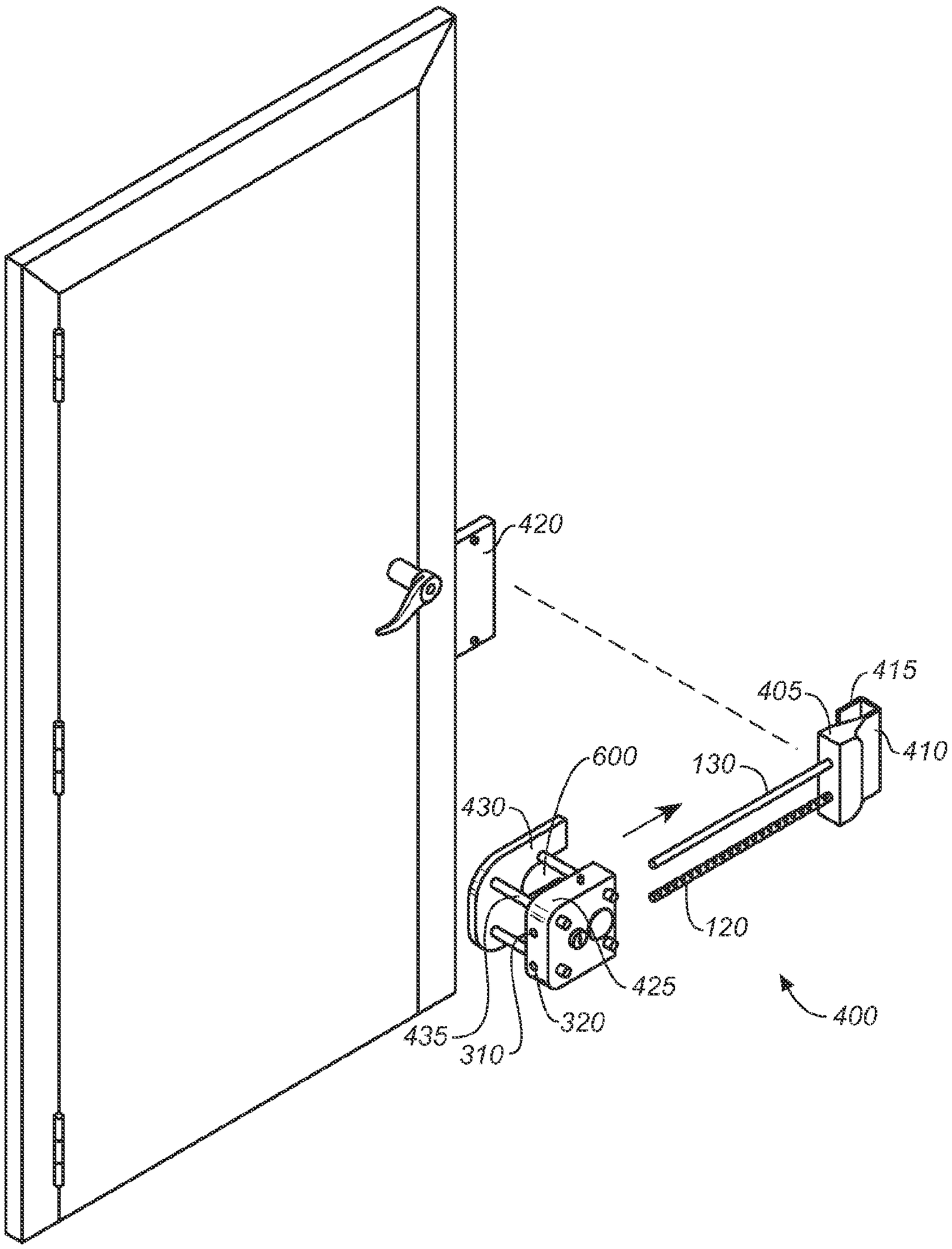


FIG._6

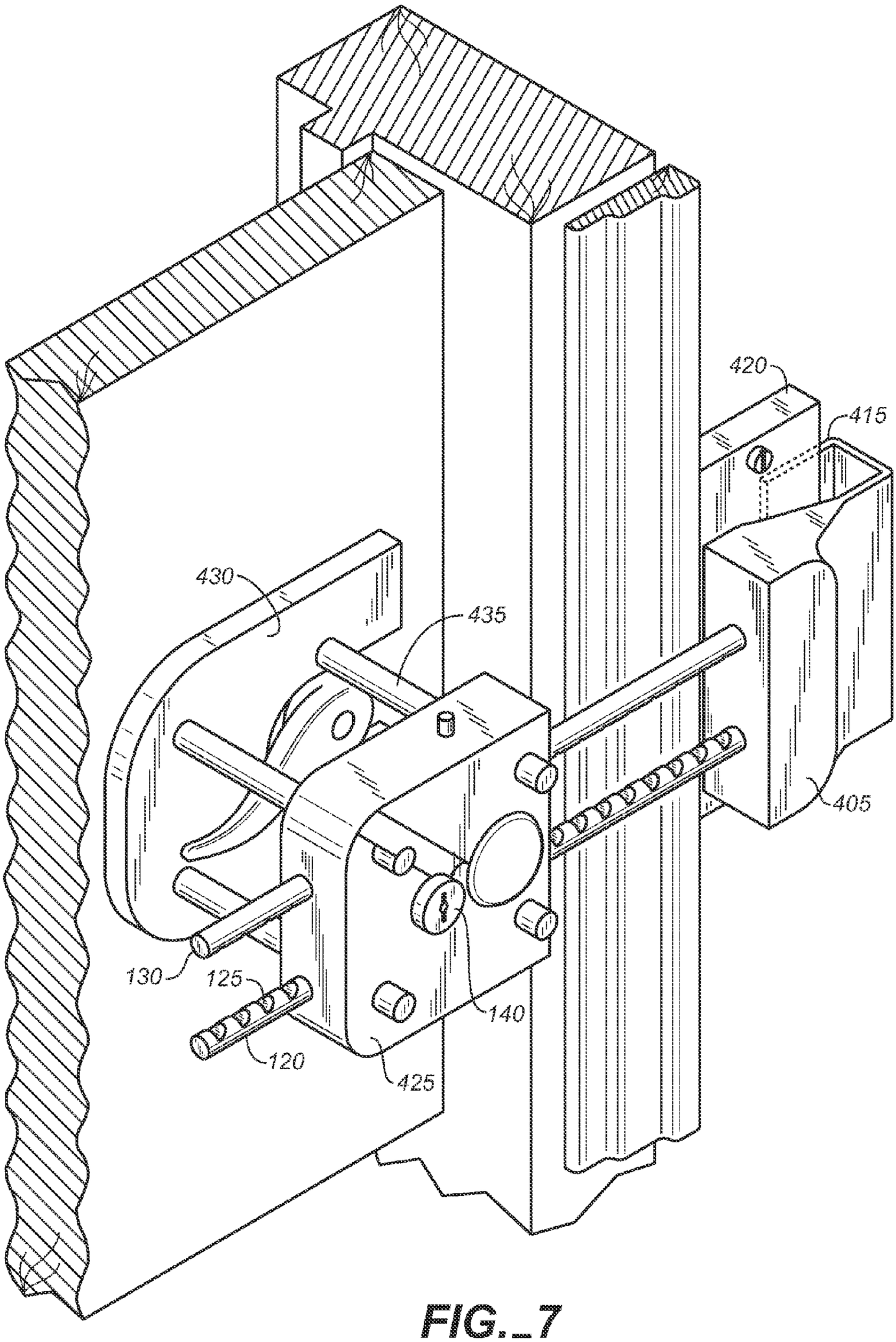


FIG._7

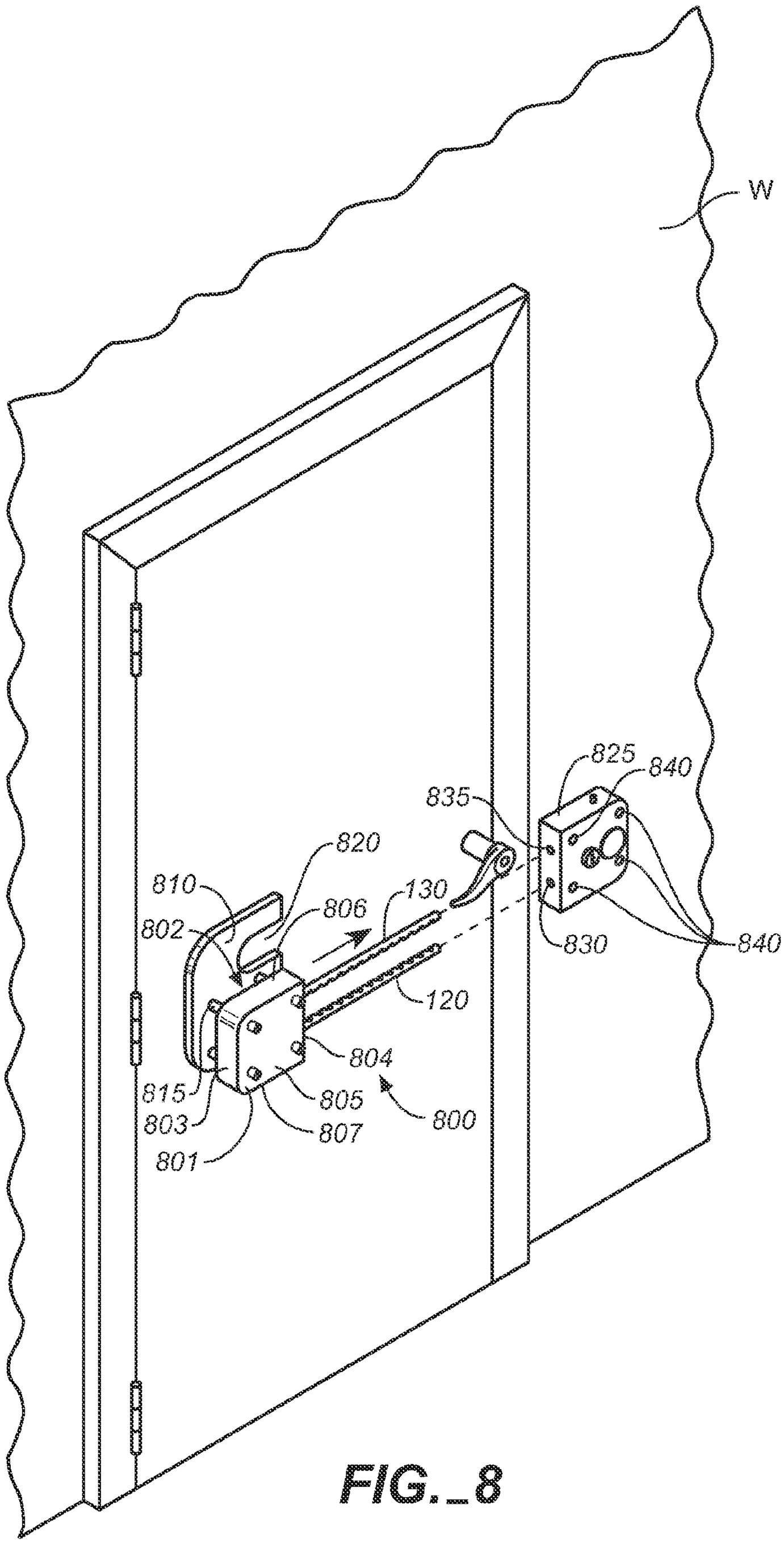

W
825
840
835
820
810
806
130
802
830
840
120
804
815
805
803
807
800
801

FIG._8

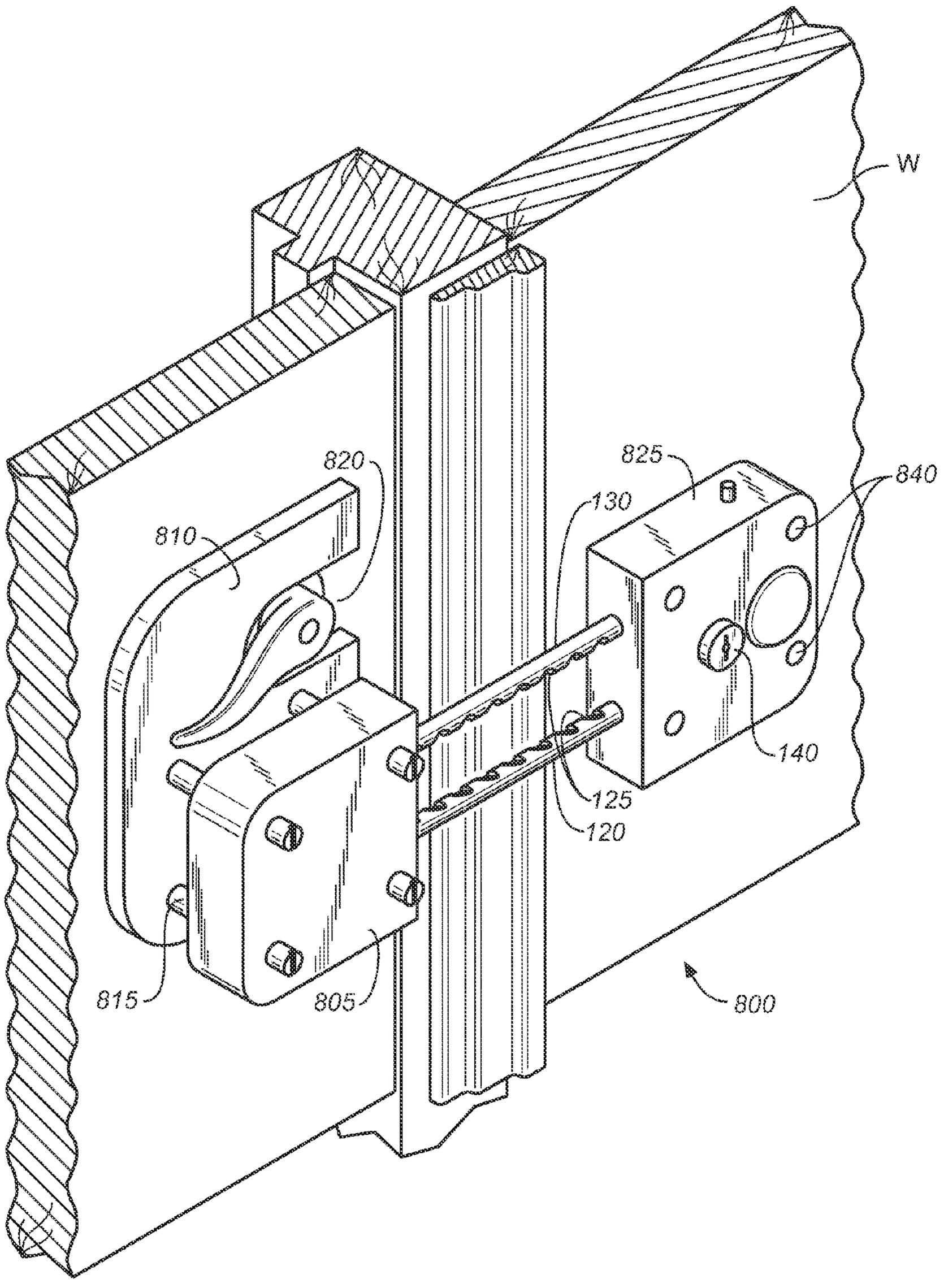


FIG._9

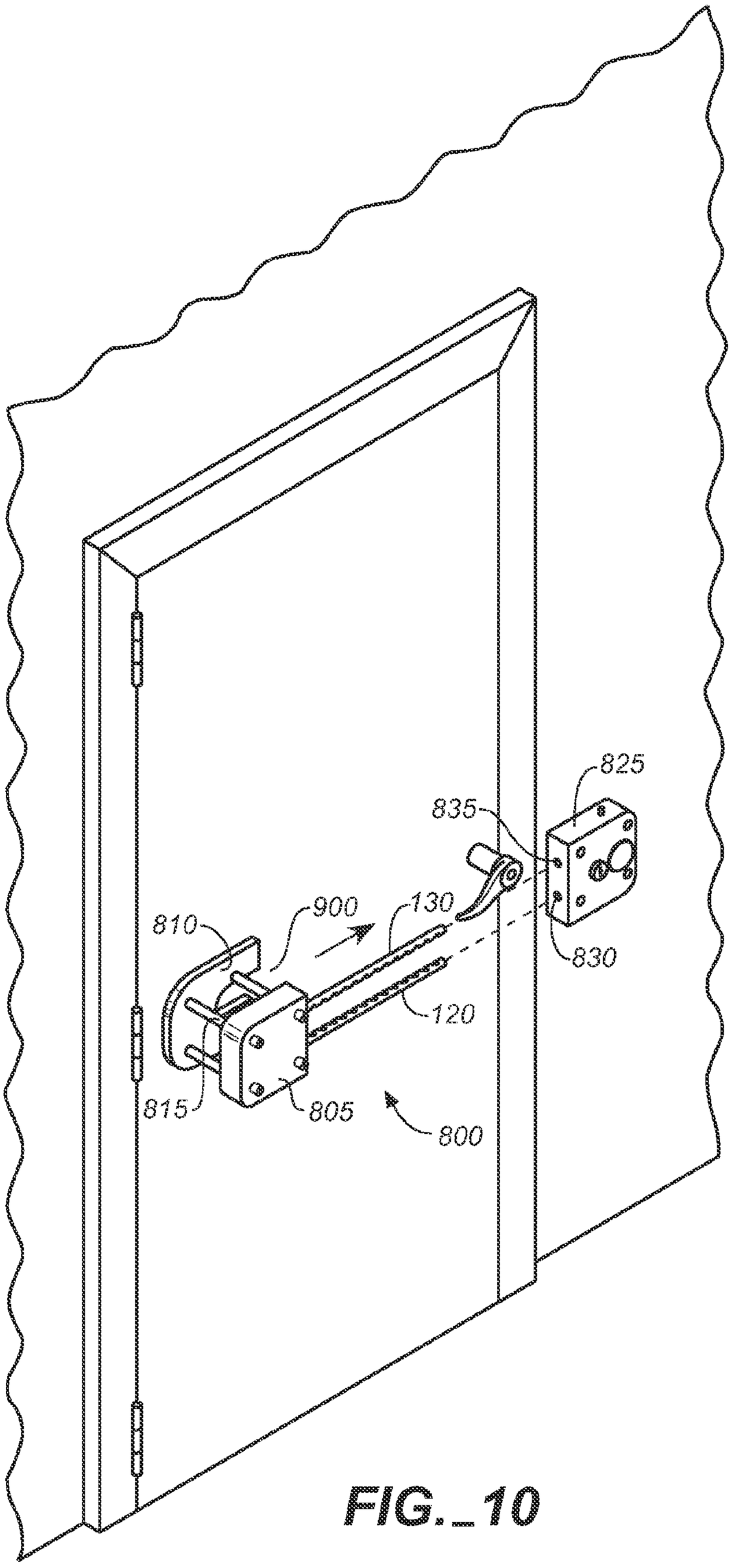


FIG._10

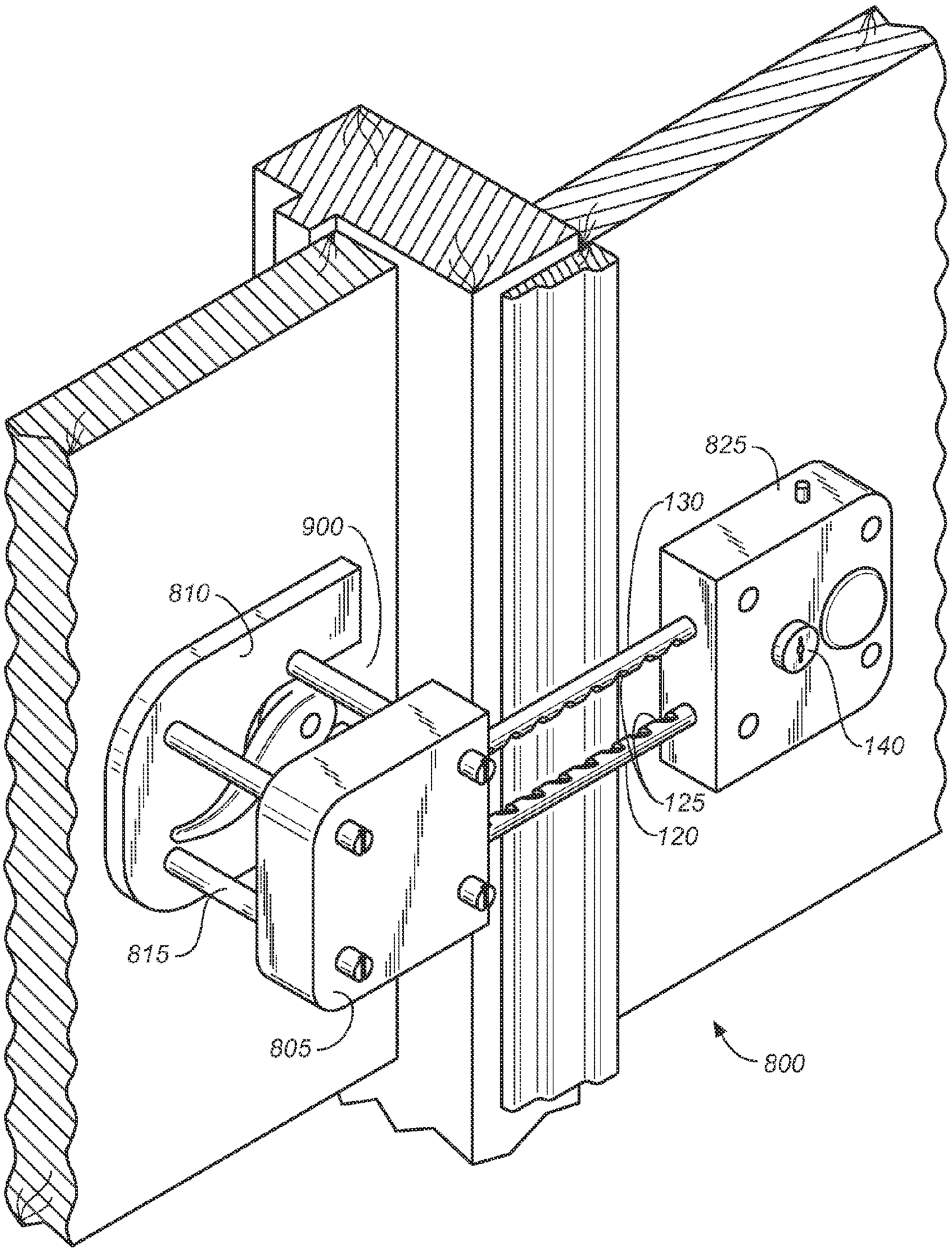


FIG._11

MULTIPURPOSE PORTABLE LOCK

CROSS REFERENCES TO RELATED APPLICATIONS

The present application claims the benefit of U.S. Provisional Patent Application Ser. No. 60/688,110, filed Jun. 6, 2005.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

THE NAMES OR PARTIES TO A JOINT RESEARCH AGREEMENT

Not applicable.

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC

Not applicable.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to portable locks, more particularly to portable locks for doors and certain movable objects, and still more particularly to a multipurpose portable lock utilizing notched parallel bars slidably inserted into openings in a receiving mechanism which houses a release and locking mechanism.

2. Discussion of Related Art Including Information Disclosed Under 37 CFR §§1.97, 1.98:

Portable locking devices are well known in the art. These devices are routinely used for securing doors to prevent unauthorized entry, and movable personal property against theft or unauthorized use.

U.S. Pat. No. 5,778,706, to Testa, teaches a marine anti-theft lock which impedes access to a nut securing a propeller on a drive shaft of an outboard engine. The lock has a two-part yoke which enable adjustment of the longitudinal dimension of the device, one part including a single notched rod for sliding into a locking receptacle.

U.S. Pat. No. 3,084,532, to Williams, teaches a sliding U-shaped shackle with a receptacle for receiving the arms of the shackle. The length is adjustable and it includes a keylock.

U.S. Pat. No. 1,395,970, to Nidermaier, teaches an automobile locking device having two shanks with hooked ends forming opposing shackles. The lengths of the shanks are adjustably insertable into a conventional combination lock body and are adapted for use with automobiles.

U.S. Pat. No. 596,237, to Damon, teaches U-shaped opposing shackles with integrated lock bodies. The lengths are adjustable, making the lock suitable for use in locking bicycles.

U.S. Pat. No. 1,343,870, to James, teaches a lock having a U-shaped yoke, a fixed arm, and an outwardly swinging arm, the inner portions of each arm having teeth. A lock block is provided to slidably move up the arms.

U.S. Pat. No. 4,426,861, to Chillis, discloses a security bracket for bicycles and motorcycles with brake handles. The locking device includes a small U-shaped shackle and a receptacle with a locking mechanism. The lock is used to lock the shackle so that the brake handle is pulled into the handlebar, thereby applying braking pressure and locking the front wheel without any device passing through the spokes.

The foregoing patents reflect the current state of the art of which the present inventor is aware. Reference to, and discussion of, these patents is intended to aid in discharging Applicant's acknowledged duty of candor in disclosing information that may be relevant to the examination of claims to the present invention. However, it is respectfully submitted that none of the above-indicated patents disclose, teach, suggest, show, or otherwise render obvious, either singly or when considered in combination, the invention described and claimed herein.

BRIEF SUMMARY OF THE INVENTION

The present invention is a multipurpose portable lock suitable for locking objects of widely varying sizes. In a first preferred embodiment, the inventive apparatus comprises a fixed shackle base having a substantially flat front side, a substantially flat rear side, right and left sides, a curved or rounded top, and a substantially planar bottom. The base further includes first and second rods extending in a parallel configuration from the bottom side of the lock in substantially the same plane as the front and back sides. Each rod includes a plurality of opposing detents or notches along their respective interior sides. The shackle base includes an extension arm that curves outwardly from the shackle base, but within the same plane as the shackle base, to form an elongate oblong recess. The shackle thus takes the general shape of a U, with the material bulk of the base in the base portion and the recess biased toward the extension arm. The extension arm includes a pin extending parallel to the first and second rods and also in substantially the same plane.

Next, the lock includes an adjustable lock body having generally flat front and rear sides, a right and left side, and a bottom and top side, the latter which opposes the bottom side of the shackle base. The lock body includes two through holes into which the first and second notched rods of the shackle base are inserted so that the lock body is slidably disposed on the rods. The lock body is selectively fixed to and released from any set of opposing detents with the key cylinder lock assembly. The lock body includes a curved outrigger arm extending outwardly from the lock body, and within the same plane as the lock body, to form an elongate oblong recess having substantially the same dimensions as the recess in the shackle base. The lock body arm includes a hole for receiving the pin in the shackle base arm. The lock body can be positioned and locked at any opposing pair of detents along the length of the rods so that it can be secured across and to any of a number of structures, such as a steering wheel and gear shift lever; gates; refrigerator door handles; conventional double door handles, and so forth.

In a second preferred embodiment of the present invention, the shackle base comprises a generally rectangular block, having a front surface, a back surface, a top, a bottom, a left side and a right side. The base further includes first and second rods extending in a parallel configuration from the bottom side of the lock in substantially the same plane as the front and back sides. Again, each rod includes a plurality of opposing detents or notches along their respective interior sides. The shackle base has a U-shaped channel extending from the back side of the shackle base, opposite the rods, the bottom of the channel extending perpendicular to the plane of the back of the shackle base, to the rear. The back arm of the channel slidably inserts into a third element of the

locking, which is a suitably shaped mounting bracket affixed to a planar surface such as a wall.

The second preferred embodiment further includes an adjustable lock body having generally square and flat front and rear sides, a right and left side, and a bottom and top side. As with the first preferred embodiment, the lock body of the second preferred embodiment includes two through holes into which the first and second notched rods of the shackle base are inserted so that the lock body is slidably disposed on the rods. The lock body is selectively fixed to and released from any set of opposing detents with the key cylinder lock assembly.

The lock body is mounted to a generally rectangular base plate on the back side of the lock body with a plurality of mounting shafts. The base plate has a U-shaped recess or cut out above the mounting shafts and on its right (inboard) side to accommodate the insertion of a door handle shaft or a similar structure. In a third preferred embodiment, which is a slight variation on the second preferred embodiment, the U-shaped recess of the base plate is disposed between the mounting shafts.

Fourth and fifth preferred embodiments of the present invention are also variations on the second and third preferred embodiments, with the shackle body, rather than the lock body, mounted to the base plate.

It is therefore an object of the present invention to provide a new and improved multipurpose lock which is portable yet heavy duty.

It is another object of the present invention to provide a multipurpose portable lock adapted for use in locking single and double doors having a variety of handle configurations.

It is a further object of this invention to provide a portable lock for applications in locking steering wheels, bicycle wheels, gates and gear shift levers.

It is still another object of the present invention to provide a portable lock having a lock base with two notched rods extending through a lock body, such that the lock body can be slidably adjusted and locked at a number of lengths along the length of the notched rods.

Other novel features which are characteristic of the invention, as to organization and method of operation, together with further objects and advantages thereof will be better understood from the following description considered in connection with the accompanying drawings, in which preferred embodiments of the invention are illustrated by way of example. It is to be expressly understood, however, that the drawings are for illustration and description only and are not intended as a definition of the limits of the invention. The various features of novelty that characterize the invention are pointed out with particularity in the claims annexed to and forming part of this disclosure. The invention does not reside in any one of these features taken alone, but rather in the particular combination of all of its structures for the functions specified.

There has thus been broadly outlined the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are, of course, additional features of the invention that will be described hereinafter and which will form additional subject matter of the claims appended hereto. Those skilled in the art will appreciate that the conception upon which this disclosure is based readily may be utilized as a basis for the designing of other structures, methods and systems for carrying out the several purposes of the present invention. It is important, therefore, that the claims be regarded as including such equivalent constructions insofar as they do not depart from the spirit and scope of the present invention.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

FIGS. **1-11** show various views of first through fifth preferred embodiments of the multipurpose security lock of the present invention; and

FIG. **1**A is an upper left front perspective view of a first preferred embodiment of the multipurpose portable lock of the present invention, shown in the open position;

FIG. **1**B is a perspective view thereof in the closed position;

FIG. **2**A is a front view in elevation thereof showing the lock in the open position;

FIG. **2**B is a front view in elevation thereof showing the lock in the closed position;

FIG. **3**A is a cross-section front view in elevation showing the locking mechanism in the free position;

FIG. **3**B is a cross-sectional front view in elevation showing the locking mechanism in the locked configuration;

FIG. **4** is an upper left front perspective view of a second preferred embodiment of the multipurpose portable lock of the present invention, showing the lock in the open configuration;

FIG. **5** is an upper left perspective view thereof showing the lock in the closed configuration;

FIG. **6** is an upper left perspective view of a third preferred embodiment of the inventive lock, showing the lock in the open configuration;

FIG. **7** is an upper left perspective view thereof showing the lock in the closed configuration;

FIG. **8** is an upper left perspective view of a fourth preferred embodiment of the inventive multipurpose portable lock, showing the lock in the open configuration;

FIG. **9** is an upper left perspective view thereof showing the lock in the closed configuration;

FIG. **10** is a perspective view of a fifth preferred embodiment of the multipurpose portable lock of the present invention, showing the lock in the open configuration; and

FIG. **11** is an upper left perspective view thereof showing the lock in the closed configuration.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIGS. **1** through **11**, wherein like reference numerals refer to like components in the various views, there is illustrated a new and improved multipurpose portable lock, generally denominated **100** herein. Although the preferred embodiments include various configurations of lock body and shackle base, as well as other mounting and object engaging elements, each embodiment of the present invention incorporates the same essential locking mechanism.

FIG. **1**A is an upper left front perspective view of a first preferred embodiment of the multipurpose portable lock **100** of the present invention. The shackle base **105** includes a substantially flat front side **102**, a substantially flat rear side **104**, right and left sides **106**, **107**, a curved or rounded top **108**, and a substantially planar bottom **109**.

The shackle base further includes a first shank or rod **120** and a second rod **130** extending in a parallel configuration from the bottom side of the lock in a plane substantially parallel to the planes of the front and back sides. An adjustable lock body **110** includes substantially flat front and rear sides **111**, **112**, a right side **113**, and a left side **114**, a bottom side **115**, and top side **116**, the latter which opposes the bottom side of the shackle base.

FIG. **1**B is an upper front left perspective view of the multipurpose portable lock **100** in the closed and locked position. This figure shows the shackle base **105** in close contact with the adjustable lock body **110**. The first rod **120** and second rod **130** are visible extending through the adjustable lock body **110**. The first rod **120** is seen to include evenly spaced detents or notches **125** which are mirrored and opposed in the second rod **130**. Also depicted is a key cylinder lock assembly **140** located on the adjustable lock body **110**.

FIG. **2**A is a front view in elevation of the multipurpose portable lock **100** in the open position; the shackle body **105** and the adjustable lock body **110** are slidably separated along the lengths of the first and second rods **120**, **130**. The detents or notches **125** are seen to face one another on opposing interior sides on the rods. An extension arm **200** curves outwardly from the shackle base, and generally within the same plane as the shackle base **105**, to form an elongate oblong recess.

Extending from the extension arm **200** is a pin **220**. The adjustable lock body **110** includes a curved outrigger arm **210** extending outwardly from the lock body and substantially within the same plane as the lock body to form an elongate oblong recess having substantially the same dimensions as the recess in the shackle base and complementing the recess in the shackle base to form an opening into which objects may be secured through installation of the inventive lock.

FIG. **2**B is a front view in elevation of the multipurpose portable lock **100** in the closed and locked configuration, showing the shackle body **105** and the adjustable lock body **110** in close contact, and with pin **200** inserted into a corresponding hole in the outrigger arm **210**.

FIG. **3**A is a cross-sectional front view in elevation of the lock body **110**, showing the lock slide **300** disposed between the first rod **120** and the second rod **130**, which are slidably inserted into a lower through hole **320** and an upper through hole **310**, respectively. A pin recess **380** is visible in the outrigger arm **210**. In this illustration, the lower dog **330** and upper dog **340** are not engaged in a detent but are urged by a spring **350** against the interior sides of the rods until such time as they come into register with a detent. However, pushing either the lower release pin **360** or the upper release pin **370** forces its corresponding dog out of its detent **125**, and thereby translates force through spring **350** to the other dog, which is thereby also released, thereby allowing the lock body to slide freely on the first rod **120** and the second rod **130**. Thus, one of the release pins must be depressed to allow continuous sliding of the lock body over the rods. Once a desired separation distance between the lock body and shackle base is reached, wherein an opening formed by the recesses fits suitable well over the objects to be secured, the release pin or pins may be released and the dogs are free to click into a detent.

FIG. **3**B is a cross-sectional front view showing the lower dog **330** and upper dog **340** urged by spring **350** into locking engagement with a detent. The lower release pin **360** and the upper release pin **370** are free to slide outwardly to release the lower dog **330** and upper dog **340** into the notches **125**, effectively locking the lock body from sliding in an outward direction. The key cylinder lock assembly **140** is then actuated to move lock slide **300** into position between the dogs and thus to prevent disengagement from the detents.

FIG. **4** is an upper left front perspective view of a second preferred embodiment of the multipurpose portable lock **400** in the open position. The shackle base **405** is a generally rectangular block, having a front surface **401**, a back surface **402**, a top **403**, a bottom **404**, a left side **406**, and a right side **407**. The shackle base further includes parallel first and second rods **120**, **130**, extending from the bottom side of the lock in a plane substantially parallel to the planes of the front and back sides.

The shackle base **405** further includes a U-shaped channel **410** extending from the back side of the shackle base **405** opposite the first rod **120** and the second rod **130**, the bottom of the channel **410** extending perpendicular to the plane of the back of the shackle base, to the rear. The back arm of the channel **415** slidably inserts into a mounting bracket **420** which may be affixed to a planar surface such as a wall.

Much as in the first preferred embodiment, the adjustable lock body **425** has substantially planar front and rear sides, a right and left side, and a bottom and top side. The lock body also includes upper and lower through holes **310**, **320** into which the first and second rods **120**, **130** of the shackle base **410** are inserted, such that the lock body is slidably disposed on the rods.

However, in this embodiment, the rear side of the lock body **425** is mounted to, and spaced apart from, a mounting plate **430** on a plurality of mounting shafts **435**. The rectangular mounting plate **430** has a U-shaped cut out **440** on its right side above the mounting shafts **435** to accommodate the insertion of a door handle shaft.

FIG. **5** is an upper left perspective view of second embodiment of the multipurpose portable look **400** in the closed position. The shackle base **405** has the back arm of the channel **415** slidably inserted into a mounting bracket **420**, keeping in a static position. The lock body **425** is slidably disposed upon the first rod **120** and the second rod **130**. A key cylinder lock assembly **140** is located in approximately the center of the adjustable lock body **425**. The notches **125** are evident on the first rod **120** and are mirrored on the second rod **130**, but are not visible in this perspective view. The lock body **425** is suspended from the mounting plate **430** with a plurality of mounting shafts **435**. As will be immediately appreciated, The space between the mounting plate and the lock body allows the mounting plate to engage the flat surface of the door while the lock body is disposed over the handle of the door.

FIG. **6** is a perspective view of a third embodiment of the multipurpose portable lock **400** in the open position. The shackle base and lock body are identical to those in the second preferred embodiment. However, the U-shaped recess in the rectangular mounting plate **430** disposed and generally centered between the mounting shafts **435** to accommodate the insertion of a door handle shaft. FIG. **7** shows the third preferred embodiment installed on a door and in the closed and locked configuration, with the back arm of the channel **415** slidably inserted into the mounting bracket **420**, thus securing it firmly.

FIG. **8** is a perspective view of a fourth preferred embodiment of the inventive multipurpose portable lock **800**, showing it in the open position. The shackle base **805** is a generally rectangular block, having a front side **801**, a back side **802**, a top **803**, a bottom **804**, a left side **806**, and a right side **807**. The shackle base further includes a first rod **120** and a second rod **130** extending from the bottom side in the

manner of the other embodiments. The back side of the shackle base **805** is mounted to a mounting plate **810** with a plurality of mounting shafts **815**. The rectangular mounting plate **810** has a U-shaped cut out **820** on its right side above the mounting shafts **815** to accommodate the insertion of a door handle shaft.

The adjustable lock body **825** is essentially the same as the lock body of the second preferred embodiment, but rather than being coupled with a mounting plate on mounting shafts, it is generally permanently installed on a wall with fasteners **840**. FIG. **9** shows the fourth preferred embodiment installed on a door handle and in a closed and locked configuration.

FIG. **10** is a perspective view of a fifth embodiment of the inventive multipurpose portable lock. The only difference between this embodiment and the fourth preferred embodiment is that the U-shaped cut-out or recess **900** on the mounting plate **810** is disposed between the mounting shafts **815**, rather than above them.

The above disclosure is sufficient to enable one of ordinary skill in the art to practice the invention, and provides the best mode of practicing the invention presently contemplated by the inventor. While there is provided herein a full and complete disclosure of the preferred embodiments of this invention, it is not desired to limit the invention to the exact construction, dimensional relationships, and operation shown and described. Various modifications, alternative constructions, changes and equivalents will readily occur to those skilled in the art and may be employed, as suitable, without departing from the true spirit and scope of the invention. Such changes might involve alternative materials, components, structural arrangements, sizes, shapes, forms, functions, operational features or the like.

Therefore, the above description and illustrations should not be construed as limiting the scope of the invention, which is defined by the appended claims.

What is claimed as invention is:

1. A multipurpose portable lock, comprising:

a shackle base having a front side, a rear side, a right side and a left side, a top, a substantially planar bottom, a first rod and a second rod, said rods having opposing interior sides with spaced-apart detents;

an adjustable lock body having front and rear sides, a right side, a left side, a bottom side, a top side opposing said bottom side, and upper and lower through holes for slidably receiving said rods;

a mounting plate and mounting shafts for attaching said mounting plate to said rear side of said lock body or said rear side of said shackle base in a spaced-apart relationship; and

lock means disposed in said lock body for engaging said rods and thereby to secure said lock body on said rods;

wherein said mounting plate includes a recess permitting placement of said lock around an object or objects to be secured when said rods are secured in the through holes in said lock body.

2. The portable multipurpose lock of claim **1**, wherein said front and rear sides of said shackle base are substantially planar.

3. The portable multipurpose lock of claim **2**, wherein said front and rear sides of said lock body are substantially planar.

4. The portable multipurpose lock of claim **2**, wherein said first and second rods extend in a parallel configuration from said bottom of said shackle base in a plane substantially parallel to the planes of said front and rear sides of said shackle base.

5. The portable multipurpose lock of claim **1**, wherein said lock means comprises a key cylinder lock assembly operably disposed in said lock body.

6. The portable multipurpose lock of claim **1**, wherein said lock means includes upper and lower dogs disposed between said interior sides of said rods, a spring urging said dogs against said interior sides of said rods, and a lock slide selectively disposed between said dogs when said dogs engage a detent in said rods.

7. The portable multipurpose lock of claim **6**, further including at least one release pin disposed in said lock body for urging one of said dogs from engagement with a detent in one of said rods so as to permit said rods to slide within the through holes in said lock body.

8. The portable multipurpose lock of claim **1**, wherein said shackle base includes a U-shaped channel extending from said rear side of said shackle base, said channel having a back arm; and further including a mounting bracket for mounting on a planar surface and into which said back arm slidably inserts.

9. The portable multipurpose lock of claim **1**, wherein said mounting plate includes said recess which does not extend between any two of said mounting shafts.

10. The portable multipurpose lock of claim **1**, wherein said mounting plate includes a recess disposed between at least two of said mounting shafts.

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